Supplier's Perspective -SMART Implementation-

Industry Leadership Advisory Group (ILAG)

Abby Rothman – Lockheed Martin
Ann Stansbarger – Northrop Grumman
Corky Hollestelle – Rockwell Collins Inc.
Jeff Geear – Boeing

ILAG Participants

BAE Systems
Bell Helicopter
Boeing
GE Aircraft Engines
Honeywell
L-3 Vertex
Lockheed Martin
Northrop Grumman
Pratt & Whitney
Raytheon
Rockwell Collins
Rolls Royce
Sikorsky Aircraft
Hamilton Sundstrand
Aerospace Industries Assoc.

Supplier's Perspective – SMART Implementation

- ✓ **S**imple Rules
- ✓ **M**anage Implementation
- ✓ **A**dvanced Planning
- ✓ **R**educe Costs
- ✓ **T**ransform!

Supplier's Perspective – SMART Implementation

- ✓ **Simple Rules**

SIMPLE RULES!

- ✓ **Get high-level support**
- ✓ **Eliminate "slow starts"…waiting for a signed contract**
  - **Start planning IUID implementation NOW!**
- ✓ **Don't waste time trying to fight the IUID requirement**
  - **Settle on some critical assumptions**
  - **Remain flexible and informed**
  - **Benefits to be realized by many as common standards and policy requirements are more universally adopted & applied**
- ✓ **LEAD your requirements!**
  - **Communication, awareness and training**
  - **You, not others, know your internal processes**

SIMPLE RULES!

- ✓ **Focus efforts on simple, low cost and integrated solutions**
  - **Utilize common toolsets and tailor to fit your needs**
  - **Engage your customers, subs, sub tiers on solutions**
  - **Be creative**
  - **Streamline methods to IUID transition**
  - **Leverage trigger events (repairs, modifications)**
- ✓ **Communicate with your suppliers NOW!**
  - **Don’t wait for the full picture…**
  - **Your suppliers need to know future direction**
  - **Provide them time to investigate integration**

SIMPLE RULES!

- ✓ **Leverage the technology to internally improve**
  - ◇ **Look to the future… Machine Readable Identification (MRI) with automated data capture**
- ✓ **"What's Your Pain?"**
  - **Multiple part marking technologies and processes**
  - **Inadequate asset visibility & accuracy**
  - **Inventory replenishment costs**
  - **Labor and schedule impacts**
    - **Manual data entry, audits, inspections**
    - **Error and Serialization corrections**
    - **Productivity losses**

Locate Industry Masters!

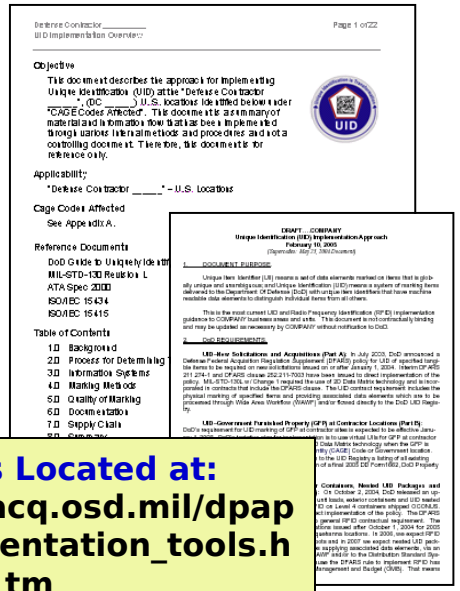
Supplier's Perspective – SMART Implementation

- ✓ **Simple Rules**
- ✓ **Manage Implementation**

MANAGE IMPLEMENTATION!

- ✓ **Engage key members to form an implementation team**
  - ◇ **Contracting, procurement/supplier management engineering, operations, information systems**
  - ◇ **Major Customer(s), DCMA, sub-contractor(s), sub-tier(s)**

- ✓ **Develop strategy and timelines based on**
  - ◇ **Compliance**
  - ◇ **Trigger events to reduce cost impacts**
  - ◇ **Internal process improvements**
  - ◇ **Optimization**


Defense Contractor _____
UID Implementation Overview
Page 1 of 22

Objective

This document describes the approach for implementing Unique Identification (UID) at the "Defense Contractor _____", (DC _____) U.S. locations identified below under "CAGE Codes Affected". This document is a summary of material and information flow that has been implemented through various internal methods and procedures and not a controlling document. Therefore, this document is for reference only.

Applicability:

"Defense Contractor _____" – U.S. Locations

Cage Codes Affected

See Appendix A.

Reference Documents

DoD Guide to Uniquely Identif
MIL-STD-130 Revision L
ATA Spec 2000
ISO/IEC 15434
ISO/IEC 15415

Table of Contents

1.0 Background
2.0 Process for Determining
3.0 Information Systems
4.0 Marking Methods
5.0 Quality of Marking
6.0 Documentation
7.0 Supply Chain

DRAFT ... COMPANY
Unique Identification (UID) Implementation Approach
February 10, 2005
(Expiration: May 31, 2005 Document)

1. DOCUMENT PURPOSE

Unique Item Identifier (UII) means a set of data elements marked on items that is globally unique and unambiguous; and Unique Identification (UID) means a system of marking items delivered to the Department Of Defense (DoD) with unique item identifiers that have machine readable data elements to distinguish individual items from all others.

This is the most current UID and Radio Frequency Identification (RFID) implementation guidance to COMPANY business areas and units. This document is not contractually binding and may be updated as necessary by COMPANY without notification to DoD.

2. DoD REQUIREMENTS

UID–New Solicitations and Acquisitions (Part A): In July 2003, DoD announced a Defense Federal Acquisition Regulation Supplement (DFARS) policy for UID of specified tangible items to be required on new solicitations issued on or after January 1, 2004. Interim DFARS 211.274-1 and DFARS clause 252.211-7003 have been issued to direct implementation of the policy. MIL-STD-130L or Change 1 required the use of 2D Data Matrix technology and is incorporated in contracts that include the DFARS clause. The UID contract requirement includes the physical marking of specified items and providing associated data elements which are to be processed through Wide Area Workflow (WAWF) and/or flowed directly to the DoD UID Registry.

UID–Government Furnished Property (GFP) at Contractor Locations (Part B): DoD's requirement for UID marking of GFP at contractor sites is expected to be effective January 1, 2005. Contractor locations are to use virtual UIIs for GFP at contractor ... Data Matrix technology when the GFP is ... ntity (CAGE) Code or Government location. ... to the UID Registry is listing of all existing ... of at least 2005 DD Form1662, DoD Property ...

... Containers, Nested UID Packages and ... On October 2, 2004, DoD released an up- ... unit loads, exterior containers and UID nested ... ID on Level 4 containers shipped OCONUS. ... ed implementation of the policy. The DFARS ... general RFID contractual requirement. The ... ations issued after October 1, 2004 for 2005 ... gestionna locations. In 2006, we expect RFID ... ints and in 2007 we expect nested UID pack- ... e supplying associated data elements, via an ... AWF and/or to the Distribution Standard Sys- ... use the DFARS rule to implement RFID has ... Management and Budget (OMB). That means

Samples Located at:
http://www.acq.osd.mil/dpap/UID/implementation_tools.htm

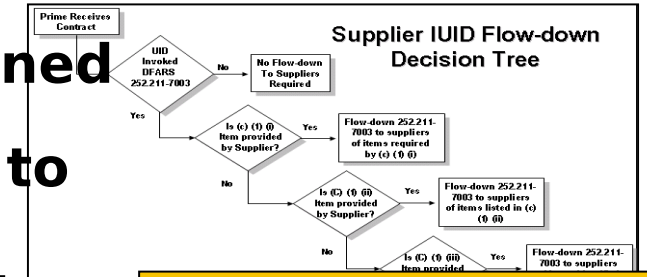
Supplier Flowdown Clause

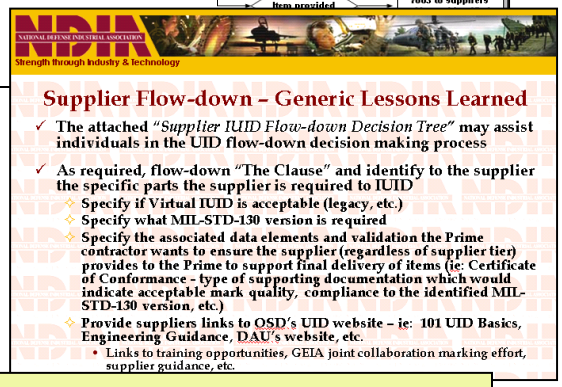
MANAGE IMPLEMENTATION!

- ✓ **Manage supplier flow-down - Sample Flow-down**
  - ***252.211-7003 Item Identification and Valuation (JAN 2004). Seller shall comply with the unique item identification requirements of this clause for those subassemblies, components, and parts specified elsewhere in this contract. Such identification and marking shall be a high-capacity 2D machine readable code to comply with MIL-STD-130L. The code may include, as space is available, linear bar code and human readable characters. Unless otherwise specified in [company] product drawings or specifications, the seller may use either Construct #1 or Construct #2. The Seller shall not be required to furnish item valuations as set forth in this clause.***

MANAGE IMPLEMENTATION!

- ✓ **Manage supplier flow-down**
  - **NDIA ILAG generic lessons learned can be utilized for all supplier flow-down – Prime to Sub; Sub to Sub-tier, etc. as required**
  - **DCMA negotiates implementation plans, SPIs, MOUs with its Primes**
  - **Share information**
    - **Streamlined methods to IUID transition (Alternate Methods)**
    - **3rd Party marking options**





Supplier Flow-down – Generic Lessons Learned

- ✓ The attached "*Supplier IUID Flow-down Decision Tree*" may assist individuals in the UID flow-down decision making process
- ✓ As required, flow-down "The Clause" and identify to the supplier the specific parts the supplier is required to IUID
  - Specify if Virtual IUID is acceptable (legacy, etc.)
  - Specify what MIL-STD-130 version is required
  - Specify the associated data elements and validation the Prime contractor wants to ensure the supplier (regardless of supplier tier) provides to the Prime to support final delivery of items (ie: Certificate of Conformance - type of supporting documentation which would indicate acceptable mark quality, compliance to the identified MIL-STD-130 version, etc.)
  - Provide suppliers links to OSD's UID website – ie: 101 UID Basics, Engineering Guidance, DAU's website, etc.
    - Links to training opportunities, GEIA joint collaboration marking effort, supplier guidance, etc.

NDIA Generic Lessons Learned
http://www.acq.osd.mil/dpap/UID/attachments/implementationTools/NDIA_ILAG_gen_les_learned_sup_flow_16sep.pdf

MANAGE IMPLEMENTATION!

- ✓ **Manage supplier flow-down**
  - **If planning to mark another entity's item**
    - **Coordinate with the entity to ensure there are no warranty or design control issues**
    - **Do not utilize another entity's CAGE Code/DODAC to construct a UII without their prior knowledge and assurance that there is no duplicate UII and the UII will not be utilized for a future item**

Supplier's Perspective – SMART Implementation

- ✓ **Simple Rules**
- ✓ **Manage Implementation**
- ✓ **Advanced Planning**

ADVANCED PLANNING

–PMO Total Program Plan-

Lessons Learned!

- ✓ **PMO engages an IUID working group**
  - **Members: PMO, Prime, Teaming Members , contracts, estimating, GFP, technical, logistics support, Depots, WAWF, Subcontractors, DCMA, etc.**
  - **Formalize communications, training, alerts…requirements may change**
- ✓ **PMO provides Program guidance, identify types of parts affected and define expectations up front**
  - **Develop affordable Program implementation plan which achieves IUID conformance (marking/data elements in IUID Registry) NLT Dec 31, 2010**
  - **Non-specific expectations breed worse case scenarios, estimates, wasted labor efforts….high cost, high schedule impacts**
- ✓ **Team develops evolutionary and phased-in approach based on PMO program value propositions, IUID insertion costs/schedule impacts, IUID maturity:**
  - **Determines IUID parts and insertion opportunities**
  - **Identifies exclusions**
  - **Defines trigger events to capture escapes and legacy**
  - **Determines contract mod approach, Virtual UII applica**
  - **Identifies cost mitigation opportunities**

Planning Tools
http://www.acq.osd.mil/dpap/UID/implementation_tools.htm

ADVANCED PLANNING!

- ✓ Preparation
- ✓ Communication
- ✓ Education & Training
- ✓ Assess Current State
- ✓ Develop Future State
- ✓ Execute
- ✓ Optimize!

Path To Implementation - Elements	Date Completed	Common Tools Available (Location)	Common Tools Used (Yes/No)	Action Items
Preparation				
UID Enterprice Process Owner Identified (Exec. Level Owner)				
Identify a UID IPT Team Leader				
Identify a UID IPT Site Team				
Identify Supplier Representation				
Identify Senior Leadership Council				
Establish Briefing Schedule at Local Management Counci				
Identify Trained Lean/Six Sigma Facilitator				
Identify A Method To Segregate/Track Preparation & Implementation Costs				
Develop Team Charter & Obtain Senior Leadership Council Approva				
Initiate UID IPT Team Kick-off				
Develop Site Strategy Using COMPANY Strategy & Planning Document				
Initiate Pre-Solicitation/Contract Customer Discussions				
Distribute UID Strategy Document				
Establish Schedule For Leadership And Contributor Reporting - Follow COMPANY UID IPT Reporting Schedule - Create Your Own Internal Reporting Schedule				
Education/Training				
Awareness				
UID IPT				
Supplier				
Communicaton				
Develop UID Communications Flow Process				
Utilize Common Communications Tools				
Assess Current Capabilities				
Identify Number/Types Of UID Items To Be Marked/Valuatec				
Identify Supplier Impact & Readiness				
Product Marking Evaluation/Application Needs				
PANY Tool Evaluation				
r Discussions				
es Identified				
siness/Contracts, Estimating, unting, Engineering, Planning, Procurement (Supplier); DD250,				
Create Future State (Part Marking And Valuation Insertions) &				

Sample Planning Checklist
http://www.acq.osd.mil/dpap/UID/attachments/implementationTools/Generic%20Business%20Unit%20Implementation%203.31.04.pdf

Supplier's Perspective – SMART Implementation

- ✓ **S**imple Rules
- ✓ **M**anage Implementation
- ✓ **A**dvanced Planning
- ✓ **R**educe Costs

REDUCE COSTS!

- ✓ **Communicate expectations to suppliers, sub-tiers**
- ✓ **Strive NOT TO specify the UII construct or the type of data qualifiers to be used by a subcontractor, sub-tier…as which construct they will use should be based on their prevailing method of product**

To: Company/Supplier Name
Address Line 1
Address Line 2
City, State, Country, Postal Code

Subject: Implementation of Item Unique Identification (IUID) Initiative

Attention: President

XX Company is implementing the Department of Defense (DoD) initiative for Item Unique Identification (IUID). The Under Secretary of Defense has referred to IUID as a cornerstone of DoD business transformation in the management of Government inventory. DoD expects IUID to help achieve integration of item data across the DoD, improve item management and accountability, asset visibility and life cycle management, and result in clean financial audits.

DoD's IUID requirement will appear as DFARS 252.211-7003 (June 2005) in prime contrac
and will contain a requirement to flow the clause and IUID requirements to subcontractors u
circumstances. In accordance with current DoD guidance, IUID will be required for the follo

- Prime contract line-item deliverables ≥ $5,000 (Government's Acquisition Cost) - ite
to the U.S. Government by contract line item number (CLIN), sub-line (SLIN), or ex
- DoD serially managed items and embedded items, mission critical and controlled in
- Items as requested by the requiring activity

It is highly likely that your company, as a subcontractor to XX Company, will eventually be a
requirement. Therefore, we encourage you to prepare now to comply with these new IUID r
be provided detailed requirements, if applicable, in new solicitations to your company, or if
order is affected. Your company may have already seen this requirement in a new business
(e.g., XXX, etc.).

If you need assistance with IUID implementation, there are valuable resources available fro
http://www.acq.osd.mil/dpap/UID/index.htm. In addition, XX Company has an active team
IUID implementation is consistent across all DoD customers, and will share IUID informatio

Your company's capability to comply with IUID requirements should become part of your ba
DoD supplier. We expect that your company will acquire and provide the basic capability,
discretionary funding in lieu of direct charges to a contract. This is consistent with the guida
Office of the Under Secretary of Defense, in its CAS Compliance Memorandum dated 9 Jul
is available at: http://www.acq.osd.mil/dpap/UID/relatedlinks.htm. In addition, we urge your
Seek additional methods to minimize the costs for implementation of IUID. These measures
developing alternative means of providing IUID marking instructions in lieu of formal drawin
following methods have been recommended by the DoD:

- Replace existing data plates with IUID labels
- Issue a global engineering change notice
- Issue part-marking work orders into the existing m

We welcome your continuing commitment as a valuable supplier to XX Company, and appr
this important matter. If you have questions, your representative may contact

Sample IUID Cost Guidance Lett…

Sample IUID Proposal Evaluatio…

DAU Website – Sample Solution Providers
https://acc.dau.mil/simplify/ev.php?ID=69923_201&ID2=DO_TOPIC

Your company's capability to comply with IUID requirements should become part of your ba
DoD supplier. We expect that your company will acquire and provide the basic capability, as we are doing, using
discretionary funding in lieu of direct charges to a contract. This is consistent with the guidance issued by the
Office of the Under Secretary of Defense, in its CAS Compliance Memorandum dated 9 July 2004. This guidance
is available at: http://www.acq.osd.mil/dpap/UID/relatedlinks.htm. In addition, we urge your company to vigorously
seek additional methods to minimize the costs for implementation of IUID. These measures should include
developing alternative means of providing IUID marking instructions in lieu of formal drawing revisions. The
following methods have been recommended by the DoD:

- Replace existing data plates with IUID labels
- Issue a global engineering change notice
- Issue part-marking work orders into the existing manufacturing process

REDUCE COSTS!

- ✓ **Eliminate redundant labor efforts by utilizing and tailoring existing toolsets and guidance**
  - **OSD Website Information Resources**
    - **Information Links: www.acq.osd.mil/dpap/UID/attachments/IUID_reference_paper20051014.pdf**
    - **IUID Toolkit: www.IUIDtoolkit.com**
  - **DAU Special Interest Area for UID**
    - **https://acc.dau.mil/simplify/ev.php?ID=18058_201&ID2=DO_TOPIC**
    - **GEIA working group**
      - **Points parts designers to feasible IUID marking solution to minimize exploratory marking testing**
      - **Non-proprietary output (Share-able)**
      - **Summary Test Data**

GEIA Marking Qual Data Site: **https://acc.dau.mil/simplify/ev.php?ID=84767_201&ID2=DO_TOPIC**

REDUCE COSTS!

Guidelines for Eng, Mfg, and Maintenance Documentation Requirements (Alternate Methods)
http://www.acq.osd.mil/dpap/Docs/uid/UIDEngDocGuidever4_120604.doc

- ✓ **Streamline methods to IUID transition**
  - **Find creative ways to incorporate IUID requirements into processes**
    - **Leverage existing part marking processes, Single Process Initiatives (SPI), Memoranda's Of Understanding or Agreement to reduce non-recurring costs and minimize individual drawing revisions!**
  - **Direct part marking may require more engineering analysis than labeling**
    - **Engineering decisions for location and type of application should be made on documented results from previous analysis**

REDUCE COSTS!

- ✓ **Streamline methods to IUID transition**
  - **Issue a global engineering change notice**
    - **Provides global instructions on how to mark qualifying items**
  - **Delay changing technical part documentation**
    - **No change in form, fit, or function of the part**
    - **UII insertion can be accomplished by a coversheet incorporating new marking instructions**
    - **Permits consolidation of drawing requirements**
    - **Rolling of part number not required**
    - **Individual drawings, if required, can be updated on a next touch basis**
    - **Negotiate MOA or MOU with DCMA as required**

REDUCE COSTS!

- ✓ **Streamline methods to IUID transition**
  - **Replace/modify existing data plates with IUID labels**
    - **Use existing data plate documentation**
    - **Current technical data already specifies the material and placement of the data plate**
    - **Labels provide high contrast allowing interrogation of mark by lower cost readers**
  - **Issue IUID marking work orders or collector drawing**
    - **IUID work orders inserted into existing mfg and enterprise resource planning processes**
    - **Collector drawing which lists all IUID part numbers referenced on all existing drawings, workmanship specs, standard marking drawings**

REDUCE COSTS!

- **Utilize cost effective IUID transition opportunities**
  - **During first-time designs**
  - **During major change modifications**
  - **During minor change modifications if the current marking method can easily be modified to add UII content**
  - **During major restores (repairs)**
  - **During minor restores if the current marking method can easily be modified to add UII content**

Streamlined Options – Quick Samples

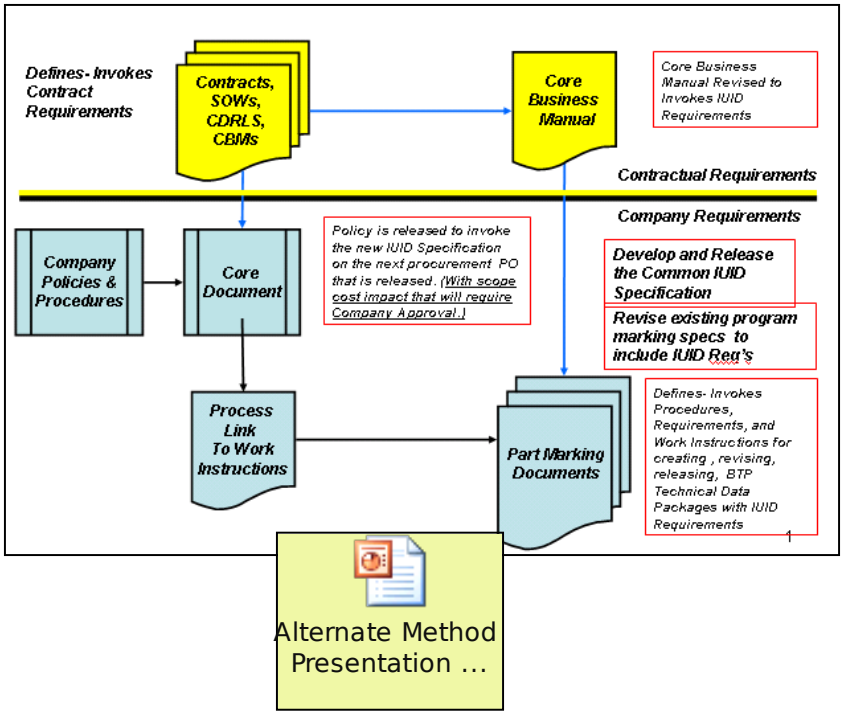
- ✓ **Nameplates**
  - **Option 1: Add IUID to existing plate**
  - **Option 2: Add IUID to supplemental plate near existing plate**
- ✓ **Direct Mark**
  - **Be consistent with existing marking methods**
  - **No need for design/structures drawing preparation or approval**
- ✓ **Use process spec to fabricate plate and locate marking**

Global Engineering Change Notice – Sample A

- ✓ **Identify with customer(s) a listing of specified parts**
- ✓ **Construct tabulated drawing showing list**
- ✓ **Update drawing to refer to tabulated drawing and implement new IUID process spec**
- ✓ **Use global process spec to provide fabrication and location instructions**
  - ◇ **Defines mark in lieu of individual drawing changes**
  - ◇ **"Mark per spec xx-xxx" or create IUID sub-spec**
  - ◇ **Retains drawing callout approach as an option**
- ✓ **Net Result = changes two drawings instead of hundreds**

Global Engineering Change Notice – Sample B

- ✓ **IUID implementation in advance of contractual requirements – MOU/MOA/SPI**
  - **Provides technology insertion to multiple sites**
  - **Coordinates / assists suppliers to minimize cost/schedule impacts**
- ✓ **Net Result = IUID insertion enacted with next MRP demand**
  - **Considerable cost avoidance**



Global Engineering Change Notice – Sample B

- Engineering part marking direction to Manufacturing without opening item design drawings/files
  - Identify with customer(s) IUID master item listing
  - Initial marking methods constrained to qualify by similarity
  - Minor change classification
  - No part number roll
  - Facilitated by one time mass update to Mfg planning

Supplier's Perspective – SMART Implementation

- ✓ **S**imple Rules
- ✓ **M**anage Implementation
- ✓ **A**dvanced Planning
- ✓ **R**educe Costs
- ✓ **T**ransform!

TRANSFORM!

- **OSD's Forward Path to Machine Readable Identification (MRI) Part Marking & Automated Data Capture:**
  - It is apparent that OSD will continue to drive MRI (2D Data Matrix) part marking, with automated data capture, throughout a DoD part's life cycle (from birth thru sustainment) to significantly reduce manual data entry, quality errors, manual audits, multiple (uncommon) marking types, etc. which cause increased costs and/or schedule impacts.
  - ILAG members have been engaged in the MIL-STD-130M draft re-write with DoD and it is anticipated that the Government will be including in its release its preference for MRI marking of all marked parts…starting with new (first-time) designed parts. It is our understanding that OSD realizes that their goals will not happen overnight but strongly suggests to Industry, Depots, etc. to start moving forward to achieve the benefits of MRI and automated data capture.

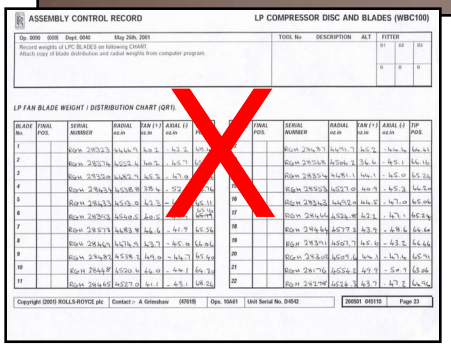
TRANSFORM!

- **Automated Identification Data Capture (AIDC):**
  - Many in industry have begun their transformation journey to one common (2D Data Matrix) part marking methodology for not only OSD compliance but for internal process improvement benefits.
  - Although change is always a challenge…this can really become a “win-win” for many in industry if we begin to plan for this transformation and utilize windows of opportunity to reduce cost impacts to transformation, such as:
    - Move to 2D Data Matrix part marking technology during the development of new (first-time) designs
    - When pre-designed parts are going through a major modification/re-analysis, etc.

TRANSFORM!

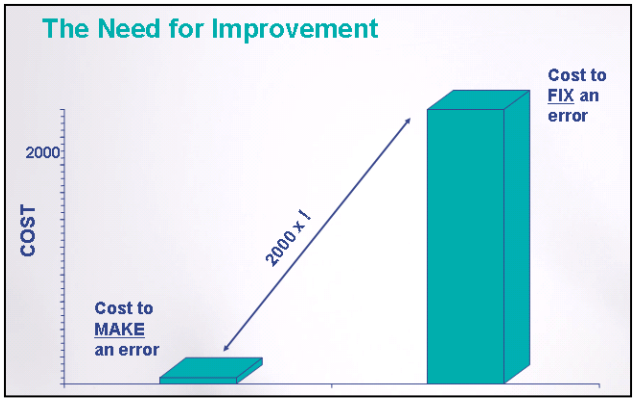
Benefits of MRI and Automated Data Capture

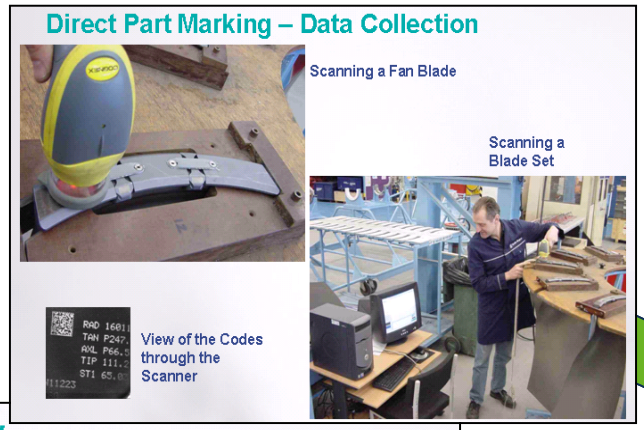
- ✓ Significantly reduces risk of quality failure associated with identification escapes
- ✓ Eliminates legibility issues
- ✓ An enabler to a paperless system
- ✓ Improves speed and accuracy of data transfer
- ✓ No data transcript errors
- ✓ Internationally recognized
- ✓ Has the ABILITY to……
  - ◇ Improve parts traceability
  - ◇ Reduce internal processing procedures
  - ◇ Capture accurate 'As Built' data
  - ◇ Check 'Should Build' data
  - ◇ Reduce Replenishment costs
  - ◇ Generate electronic log books

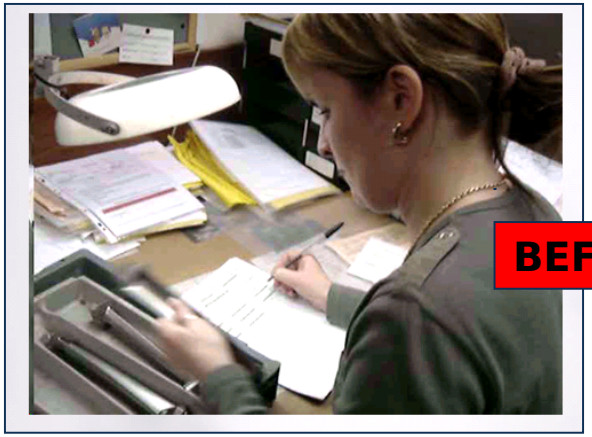

ASSEMBLY CONTROL RECORD
LP COMPRESSOR DISC AND BLADES (WBC100)

LP FAN BLADE WEIGHT / DISTRIBUTION CHART (QRT).

An MRI Journey - Sample







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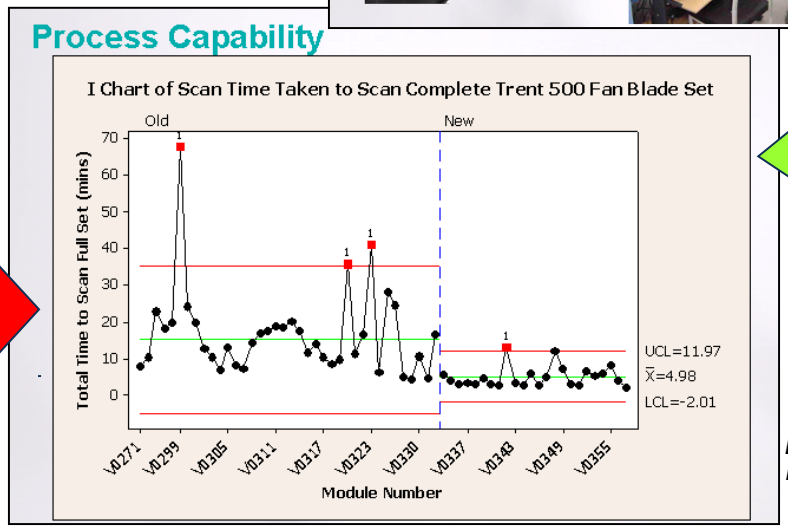


AFTER

Provided Courtesy of Rolls Royce Engines : Nat Russhard Oct 2005

Technical Information
-Lessons Learned-

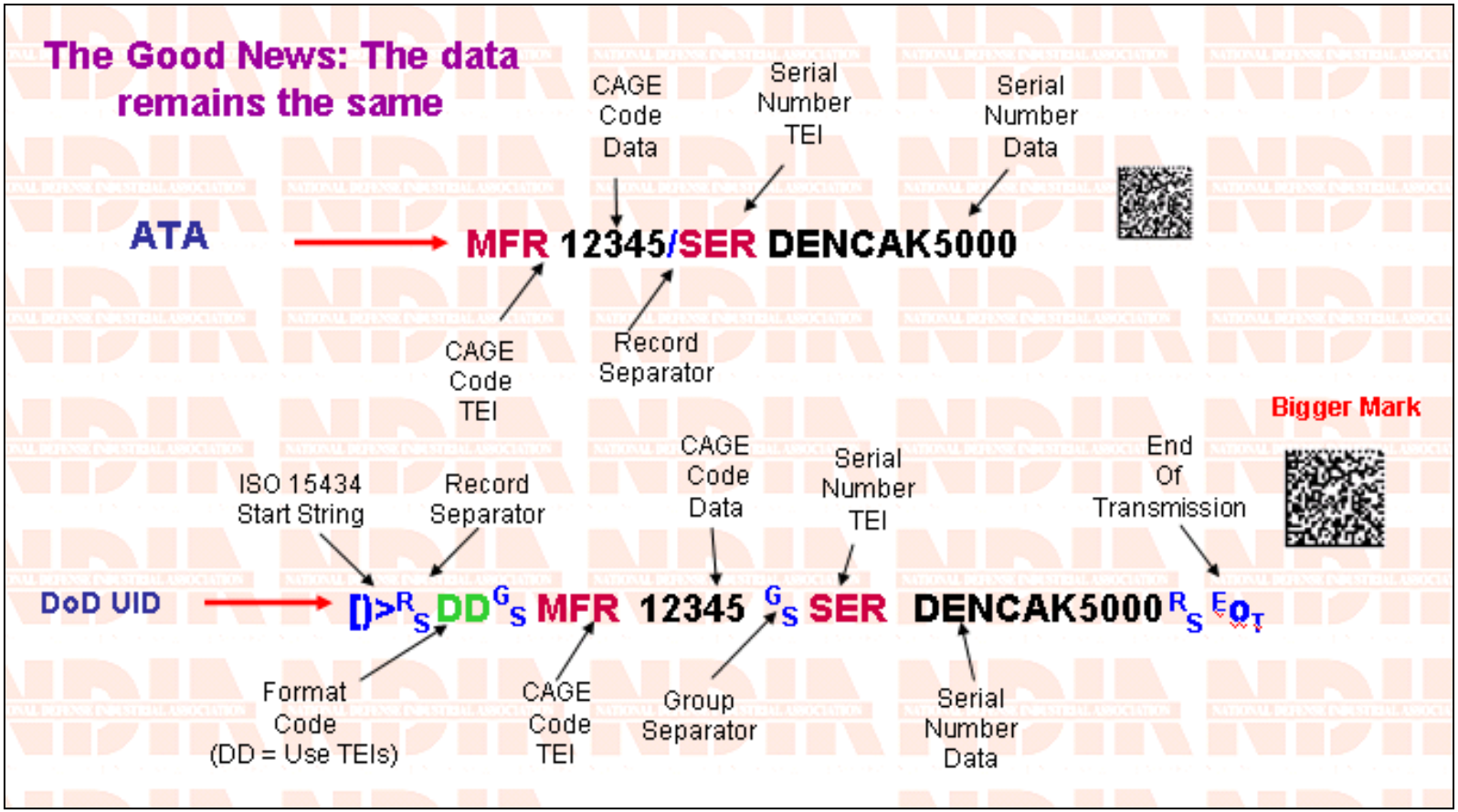
Technical Information

- ✓ **Eliminate UII construction errors which could cause costly labor hours to fix and schedule delays**
  - **Don't encode the UII data element string without a format code**
  - **Don't 'hard code' RS, GS, EOT for the ASCII characters in the syntax**
  - **Use the message header, group separators, record separator, and end of transmission in the syntax**
  - **Don't use the same enterprise identifier more than once in the message string**
  - **Use the appropriate data qualifier when encoding a concatenated UII or a DoD recognized IUID equivalent**
  - **Don't mix the use of Data Identifiers, Application Identifiers or Text Element Identifiers in the message**
- ✓ **Finding a UII construction or syntax error AFTER marking the part is too late!**

Tips!

http://www.acq.osd.mil/dpap/UID/attachments/Tips%20on%20Constructing%20the%20UII.pdf

Technical Information



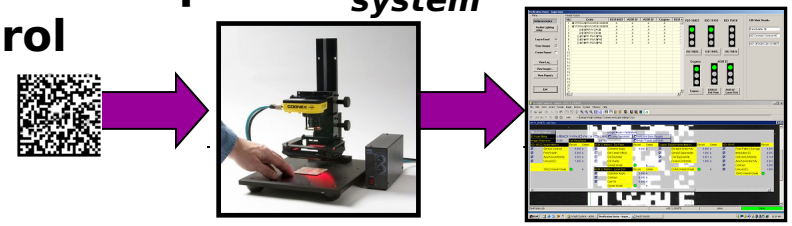
The DoD UID Construct is an accepted equivalent to the ATA Construct.

Technical Information

<u>Verification</u> – Evaluation of the marking quality of the 2D Data Matrix symbol for:

- **Marking quality and part payment acceptance**
- **Marking process setup and control**
- **Prediction of marking durability**
- **Standards are still evolving**
- **Sampling plan**
  - **Defined by internal Mfg process procedures for the verifier**
  - **5% of markings checked but could be larger based on batch size**

ISO Verifier system



<u>Validation</u> – 2D Data Matrix symbol has the appropriate syntax and semantics according to the MIL-STD-130L Change 1

- **Syntax shall comply with ISO 15434 → Unprintable ASCII characters complicate that**
- **Semantics for TEIs shall comply with ATA SPEC 2000, Chapter 9**

IN SUMMARY…

- ✓ **Simple Rules**
- ✓ **Manage Implementation**
- ✓ **Advanced Planning**
- ✓ **Reduce Costs**
- ✓ **Transform!**

and…continue to share Lessons Learned!

Panel Session Members

Abby Rothman – Lockheed Martin
Ann Stansbarger – Northrop Grumman
Corky Hollestelle – Rockwell Collins Inc.
Jeff Geear – Boeing